

attraction—and in one other fact, which is this. It is absolutely impossible to prove that *any stroke at all* would have occurred at the house if the attractive conductor had not been present. Granted, we (opponents) say, that your conductor, if in good order, *may* be the means of averting the terrific force of the explosion from the non-conducting materials of the building when once the stroke has been developed, we nevertheless prefer that our houses should receive *no stroke at all*. We infinitely prefer to run the extremely unlikely chance of ever being visited by a lightning-stroke to the practice of deliberately inviting such a stroke to our houses, and of trusting to the excellence of the rod-manufacturer's arrangements to avert any portion of its effects from the inmates and the structure.

Holding, then, as we do, that the principle of the lightning-rod, *quâd* its necessary exposure of additional elevated metal on a building, is vicious, and that nothing of a beneficial nature due to the preventive power of its point (if it have one) can obliterate this dangerous tendency, the undoubted disadvantages of the system, due to the defects in practice that habitually accompany the employment of rods, appear to be minor points. But the reviewer's reasoning on this branch of the subject is worthy of remark. He says (p. 52) : "The failures incident upon defective work—as all unbiased and properly-trained thinkers are aware—are amongst the weightiest of the arguments that tell in favour of the employment of conductors." This sentence is wholly beyond my own reasoning power. Because (*ceteris paribus*) an apparatus is liable to failure on account of being defectively constructed, *thence* it should be employed! He goes on to say :—"In a very large majority of the cases in which accidents have occurred to buildings which have been furnished with lightning-conductors the mischief has actually been traced by competent inquiry to some easily recognised fault or deficiency of construction." Allowing that even in *all* cases in which these disasters had occurred this statement were true, what does it show? Why, simply the very cheap sort of perception known as *wisdom after the event*. The manner in which, after the blow has happened, ingenious excuses are constantly made for the unfortunate conductors, which previous to the event had never been found fault with, is to the opponents of rods one of the most amusing and least edifying circumstances that environ the use of these instruments. But I would now venture to submit a few statistics derived from researches specially made by me during the last five years in regard to strokes and accidents in connection with lightning-rods. Up to date I have collected the fullest details of 320 well-authenticated cases. In 204 of these, or 64 per cent., injuries either to rods, constructions, or persons, occurred. In 151 cases, or 47 per cent., there were injuries either to constructions or to persons. Out of these 151 incidents, 71 contain in their records no allegations as to the existence of faults, either in the rod or in its "earth," until *after the event*, and the remaining 80 furnish no record of such faults being found *either before or after the event*. And indeed the whole of the results of my researches afford evidence (and especially in regard to the "earths" of rods) that failures and accidents more frequently happen with rods in what is deemed good order, than with those considered after the event to have been in bad order.

The reviewer in his enthusiastic advocacy of lightning-rods advises his followers not to be content with single, or even a few, rods on their houses, but to cover them with "a broadly-cast net of metallic meshes and lines." And he concludes with the following sentence :—"The free and frequent use of the testing galvanometer is the natural consummation of the benevolent work which was initiated by Franklin 130 years ago. Without this instrument the lightning-conductor is a hopeful and very generally helpful expedient. But with the galvanometer it is now assuredly competent to take rank as a *never-failing protection*." These *dicta* aptly conform with the reviewer's tactics in respect of the practical question of the *cost* of lightning-conductors. Here again, as in the case of the preventive power of points, he never mentions the subject. He seems to think that persons of common sense are capable of throwing "a broadly-cast net of metallic meshes and lines" of the purest copper over their houses, and of entertaining at frequent intervals the services of electrical testers to attend to these meshes and lines, without first counting the cost. He is perhaps unaware that (according to Sir William Thomson) the Glasgow manufacturers think it cheaper to insure their factories rather than to employ lightning-rods. But surely in regard to the statement that the use of the galvanometer makes the lightning-

conductor a "never-failing protection," there is some little obscurity in the premises and conclusions. It is well known that rod advocates recommend the use of the galvanometer principally in order to test the resistance of the rod's "earth." If this resistance should prove to be above a certain standard, they say that the rod is not only useless, but dangerous. How is the mere fact of the *knowledge* that a rod is useless, or that its earth-resistance is too great, a "never-failing protection"? And what remedial measures can possibly obviate the dryness of the ground? One might as well say that the services of a physician who, having tested his patient's state of health, should tell him that he was in a bad way, and should then dismiss him, constituted a "never-failing protection." In the case of the rod the only protective feature appears to me to lie in the probability that most persons who were also "unbiased and properly-trained thinkers," on being informed that the galvanometer had demonstrated their rods to have a too great "earth" resistance, would immediately pull them down. But obviously this is hardly the reviewer's meaning.

ARTHUR PARNELL

53, Fulham Park Gardens, November 17

Government Scientific Books

SHORTLY after the commencement of the publication of the "Scientific Results of the Voyage of H.M.S. *Challenger*" by the Government, the late Mr. T. C. Cobbold, M.P. for Ipswich, inquired in the House of Commons whether, inasmuch as this expedition was undertaken with the nation's money for national scientific purposes, a copy of the volumes as published would not be presented to the public libraries supported by public rates, &c. The Government reply was that the expense of supplying the work gratis to such libraries in the different towns throughout the country would be too large.

I should like to ask whether it would have cost anything like the 87,500*l.* which the Government has recently paid for only two pictures from the Blenheim collection, and whether the ratepayers throughout the country have not a far greater right to be supplied (through their libraries) with the opportunity of seeing and studying the results of their own scientific expeditions than the remote opportunity of seeing these two 87,500*l.* paintings at Kensington.

I see by your advertisement that the tenth volume, at 50*s.*, of the "Challenger Reports" is just published. What chance have thousands like myself of ever seeing them. Our public museum library cannot afford to purchase them, though I have little doubt but that our town, with its 50,000 inhabitants, has more than paid for a copy of the Reports in its share towards the expense of the Expedition and the publications resulting therefrom.

As a country ratepayer I must protest against this centralisation of all the great works in art and the benefits and results of scientific expeditions in London. Some of your correspondents have complained that such *national publications* are not supplied to great national libraries abroad, but how is it that even we who have had to pay for them cannot ever get a sight of the results of such interesting and important national scientific expeditions. "Cannot afford it" is the Government reply, but how then can they afford 87,500*l.* for two paintings for the national galleries? I do not grudge the expenditure of the people's money for the latter, only when set off against the "cannot afford" for the former.

W. BUDDEN

Ipswich, November 18

P.S.—I have the two volumes of Sir C. W. Thomson's "Voyage of the *Challenger*," but they have only tended to create a greater desire to see the complete "Government Reports," a wish, alas, which, from the expenditure of the 87,500*l.* for pictures by the Government, is further off than ever.

Peculiar Ice Forms

ABSENCE from town prevented me from seeing NATURE of November 6, in which there is a letter (p. 5) signed B. Woodd Smith with the above heading.

Possibly Mr. Smith's very ingenious explanation of the cause of the columnar form of the shallow stratum of ice he so well describes may be the correct one; yet perhaps I may be permitted to offer a very different solution of the difficulty connected with this very curious ice formation.

I have frequently noticed, both on lakes having deep water

and on those so shallow as to freeze to the bottom, that when the winter ice had nearly all thawed away, the remaining ice assumed the basaltic or columnar form, which on the deep-water lake could be walked over with perfect safety in the early-morning, being then perhaps six or eight inches thick, and apparently quite solid, but which all disappeared a few hours afterwards in a magical manner, the columns having become very rapidly detached, especially if there was a fresh breeze, and, falling over on their sides, became invisible, and drifted to the lee side of the lake. This often led to a very general but wholly erroneous belief that the ice had *sunk*.

The question may be very naturally put: What has all this to do with "peculiar ice forms" on dry land?

The foregoing particulars are mentioned to show that ice in wasting away assumes not unfrequently the basaltic form.

I believe that the bank on which the peculiar ice was noticed by Mr. Smith, and described by him as bare of vegetation, is usually covered in winter by a deep snowdrift, and that, towards spring and later, pressure and the percolation of water from the thawing surface converts the lower stratum of snow—still colder than the freezing point—into ice. May not this ice, when nearly all wasted away, assume, as it does on the lakes, a basaltic structure?

May not the division of this four inches of ice "into four distinct layers—the columns of one layer being readily detached from those underneath"—be accounted for by what I have found to take place in snowdrifts, as I shall attempt to explain.

In building snow-huts there are two requisites essential for perfection in this kind of architecture. First, the snow has to be packed so firmly by the force of the wind as to be hard enough to walk over without sinking in it; secondly, the required depth of from fifteen to sixteen inches must be the formation of one and the same snowstorm and gale of wind. If this is not so, and the required depth of fifteen inches has been the result of three separate snowstorms, the blocks of snow, when sawn out, would not cohere, but break into three narrow strips of four or five inches each, which would render hut-building in the proper artistic manner and with rapidity (an important point in very cold weather) impossible.

These separate layers of ice noticed by Mr. Smith may possibly be the small remains of four separate and distinct snowstorms piled one above the other, which I know do—whilst in the form of snow—retain their individuality for the whole winter, although super-imposed the one upon the other.

The layer of "dirt" which Mr. Smith, from his point of view, very naturally supposes to be evidence that the mass of "peculiar ice" was pushed up from below, may be very easily otherwise accounted for.

In all gales with drifting snow in the Arctic, especially when there are high steep lands to be passed over, part of the ground is cut away by the driving snow in the form of fine powder or dust, and is carried sometimes a long way until deposited with the snow in some sheltered part.

This dust is small in quantity as compared with the bulk of snow, and is scarcely discernible when mingled with it; but when greater part of the snow melts, the dust shows as a very perceptible coat of "dirt" on the surface, which I consider has come down from above instead of being "pushed up from below" out of the ground as Mr. Smith believes to be the case.

4 Addison Gardens, Kensington, W. JOHN RAE

Fly-Maggots Feeding on Caterpillars

IN reply to Dr. Bonavia's note on the above subject in NATURE for November 13 (p. 29), I beg to inform him that the larvae of the house-fly are often internally parasitic on the larvae of Lepidoptera. I have bred them in large numbers from *Vanessa io* and *Saturnia carfini*, also from other species more sparingly. Nor is this the only species of Diptera that infests Lepidoptera, F. N. PIERCE

143, Smithdown Lane, Liverpool

Birds'-Nest Soup

IN NATURE of July 17 last (vol. xxx, p. 271), just received, appears an article on "Birds'-Nest Soup," which contains the statement that "the nests of the *bats*¹ and swifts were seen hanging in clusters from the sides and roof." That the addition of the "bats" to the contributors of the nests is not an acci-

¹ The italics are mine.—E. L. L.

dental *lapsus calami* is shown further on, when we read that the visitor eating the soup will "at any rate have the satisfaction of knowing that he has before him a dish the principal ingredient of which was formed by the little swifts and bats" which inhabit the Gomanton Caves," &c., &c.

I too have visited caves from which large quantities of edible birds' nests were collected. I saw plenty of *bats*, but, unfortunately, none of their nests! The nests I saw were built by a "swiftlet" (*Collocalia*, Gray), and were more or less the product of their own salivary glands. This fact was known as far back as 1781, over one hundred years ago!! The "white nests" are supplied entirely by the inspissated saliva of the bird, and are the first produced. These are taken, and sold for their weight in silver. The next made by the birds are mixed with rootlets, grasses, &c., and often show traces of blood, from the efforts of the birds to produce the saliva. These are esteemed second quality. The third nest is composed of extraneous substances cemented together and to the rock with a little saliva; these are generally left for the bird to breed in, and are usually destroyed at the end of the season to compel the birds to build fresh white ones after their powers are recruited by a year's rest and stimulated by the breeding "storge."

All this genus—the swiftlets (*Collocalia*)—wherever found, produce, in a greater or less degree, an amount of saliva which is used in building their nests and attaching them to the surfaces of rocks or the insides of hollow trees and leaves. The properties in this saliva—as in the *kava* of the Fijians and the *pepsine* of the calf—give it its value in the eyes of the Chinese. If it were simply a "fungoid growth" woven together, why is it not gathered from the limestone rock in its pure state?

British Consulate, September 17

E. L. LAYARD

THE PRIME MERIDIAN CONFERENCE

WE believe that the protocols of this Conference have not yet reached this country. In the meantime we are permitted to give the official statement of the resolutions.

FINAL ACT

The President of the United States of America, in pursuance of a special provision of Congress, having extended to the Governments of all nations in diplomatic relations with his own, an invitation to send Delegates to meet Delegates from the United States in the City of Washington on October 1, 1884, for the purpose of discussing, and, if possible, fixing upon a meridian proper to be employed as a common zero of longitude and standard of time-reckoning throughout the world, this International Meridian Conference did assemble at the time and place designated; and, after careful and patient discussion, has passed the following resolutions:—

I. "Resolved, That it is the opinion of this Conference that it is desirable to adopt a single prime meridian for all nations, in place of the multiplicity of initial meridians which now exist."

This resolution was unanimously adopted.

II. "Resolved, That the Conference proposes to the Governments here represented the adoption of the meridian passing through the centre of the transit instrument at the Observatory of Greenwich as the initial meridian for longitude."

The above resolution was adopted by the following vote:—

In the affirmative—

Austria-Hungary,	Mexico,
Chili,	Netherlands,
Colombia,	Paraguay,
Costa Rica,	Russia,
Germany,	Salvador,
Great Britain,	Spain,
Guatemala,	Sweden,
Hawaii,	Switzerland,
Italy,	Turkey,
Japan,	United States,
Liberia,	Venezuela.